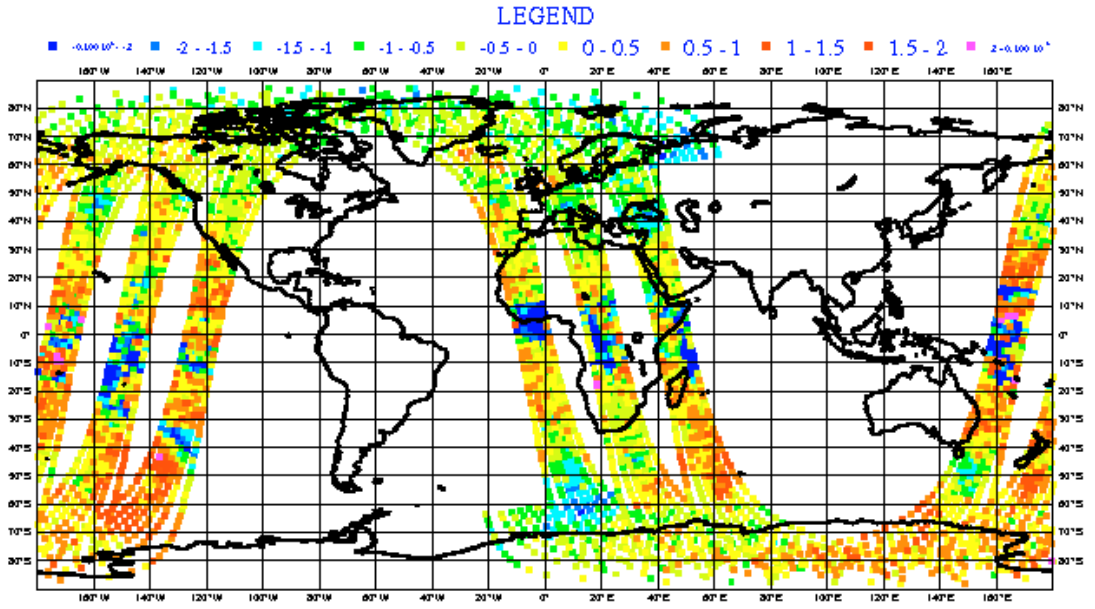
Progress with AIRS at ECMWF

- NESDIS NRT data vs ECMWF simulations
- 3D /4D assimilation experiments in progress (pre-conditioning)
- Neural Net cloud detection still under development
- Extraction of CO2 being studied

Comparison of NESDIS NRT with ECMWF AIRS simulations

- Upper-sounding temperature channels generally very good agreement (suggesting RT models and input temperature fields are similar). Yellow indicates better than 0.5 K

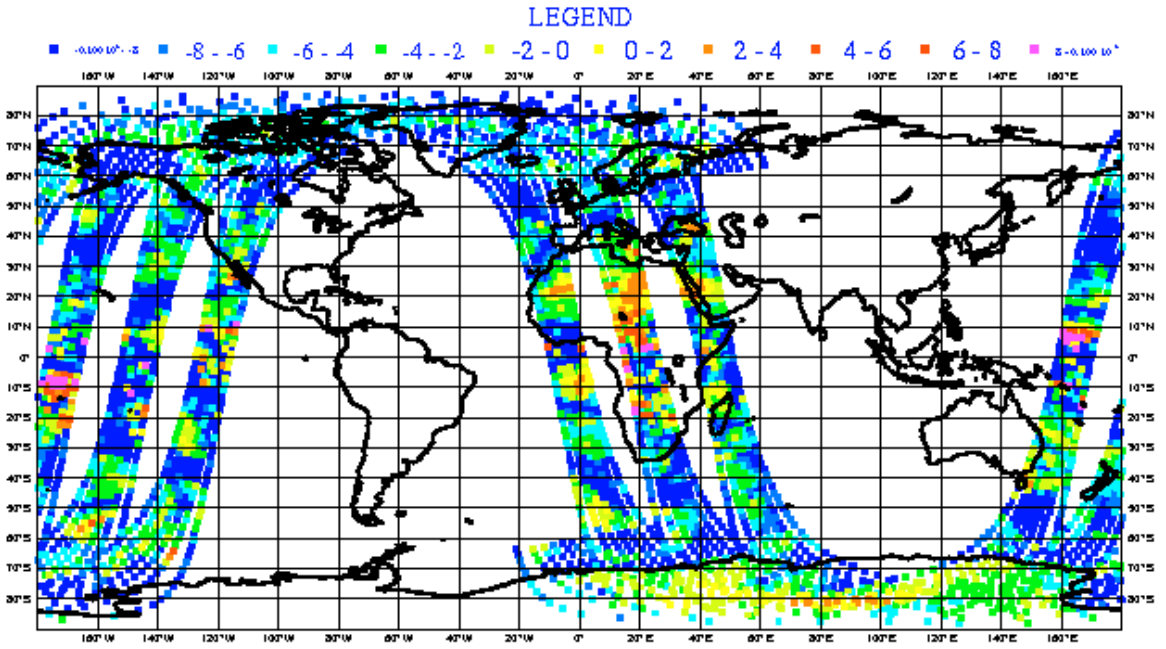
NESDIS-NRT minus EC-simulation in AIRS channel 139 (14.5 micron)



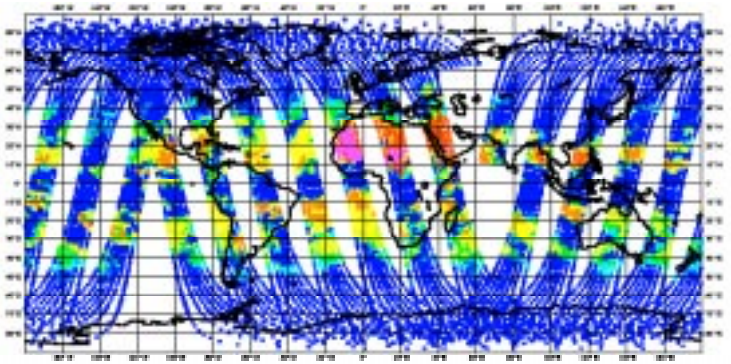
Comparison of NESDIS NRT with ECMWF AIRS simulations

- Upper-troposphere humidity channels show a large bias (suggesting NWP models may have a systematic humidity difference). Blue indicates worse than 10K

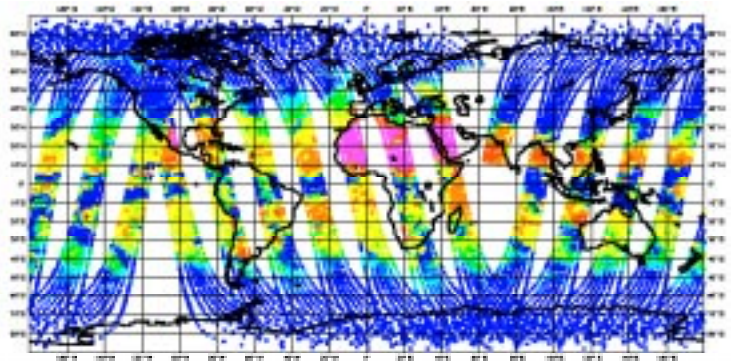
NESDIS-NRT minus EC-simulation in AIRS channel 1708 (6.7 micron)



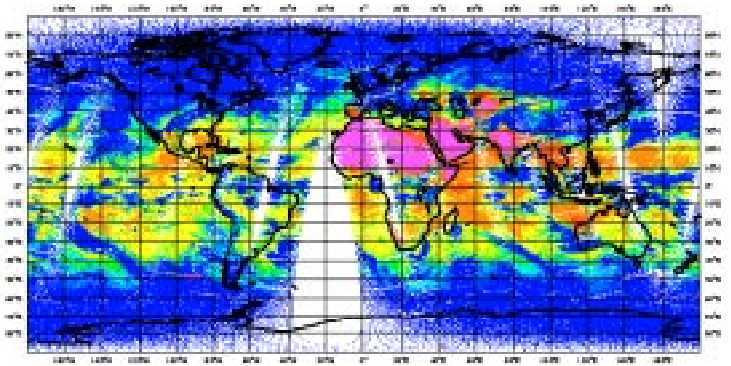
Comparison of NESDIS NRT with ECMWF AIRS simulations



NESDIS-NRT
AIRS-760



ECMWF
AIRS-760



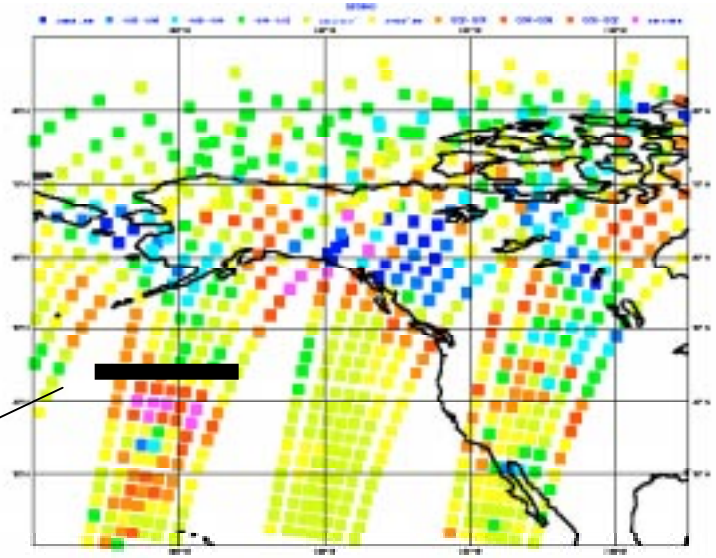
Observed
HIRS-8

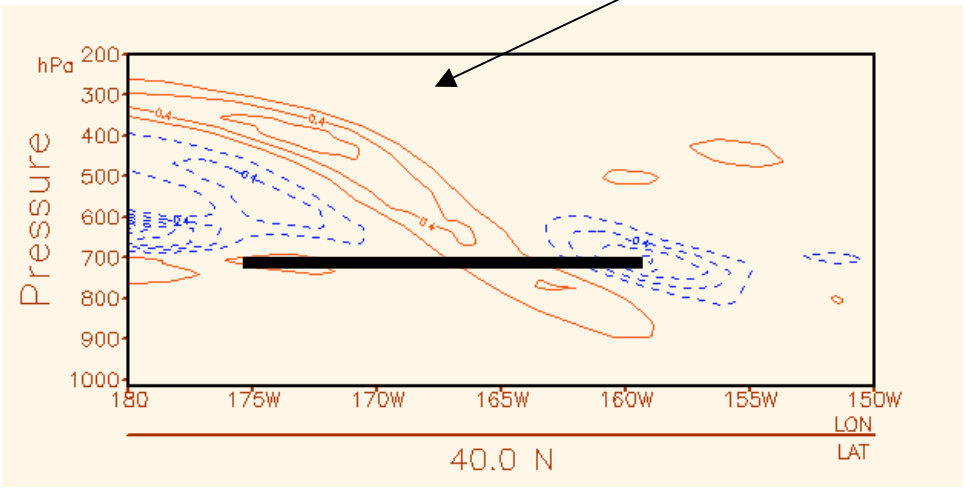
- The NESDIS NRT data is more cloudy than equivalent EC simulations suggesting there is more cloud in the NCEP NWP model.

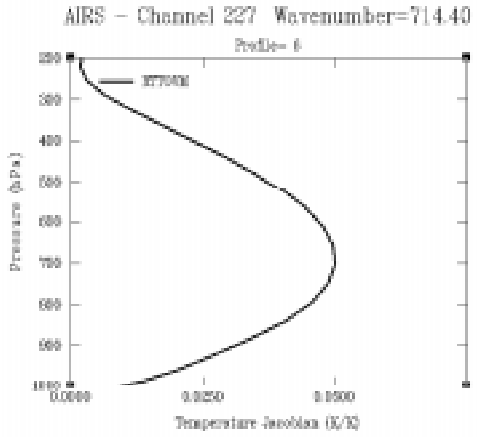
Observing key analysis errors

- experiments continue to establish an optimal channel and analysis pre-conditioning to resolve baroclinic key analysis errors

Key analysis error in radiance







Extraction of CO2 from AIRS

- Make synergistic use of AIRS and AMSUA
- Vertical information supplemented with transport model
- aim to use short-wave part of spectrum to avoid ambiguities of long-wave(H20,O3)